I Claim:

1. A device for cleaning flue gas, comprising:

a flue gas passage for conducting flue gas in a given flow direction;

an apparatus for injecting an additive adapted to release a reducing agent in said flue gas passage;

a catalytic converter for reducing nitrogen oxides disposed in said flue gas passage; and

a mixer for rendering a mixing of the flue gas with the reducing agent more uniform disposed downstream of said catalytic converter in the given flow direction.

2. The cleaning device according to claim 1, wherein said mixer is a first mixer, and wherein a second mixer and a first flow rectifier are disposed in series in said flue gas passage between said injection apparatus and said catalytic converter.

3. The cleaning device according to claim 2, which comprises a diverter apparatus for the flowing flue gas disposed between said second mixer and said first flow rectifier.

4. The cleaning device according to claim 1, wherein said mixer is a first mixer, and wherein a flow guiding device

selected from the group consisting of a second mixer and a first flow rectifier is disposed in said flue gas passage between said injection apparatus and said catalytic converter.

5. The cleaning device according to claim 1, wherein said catalytic converter is composed of a plurality of catalytic-converter layers, and said mixer includes a respective mixer disposed downstream of each catalytic-converter layer.

6. The cleaning device according to claim 5, which comprises a rectifier for the flowing flue gas disposed in said catalytic converter upstream of at least one of said catalytic-converter layers.

7. The cleaning device according to claim 6, wherein said flow rectifier is selected from the group consisting of lamella rectifiers and grid rectifiers.

8. The cleaning device according to claim 1, wherein said mixer is a static mixer.

9. The cleaning device according to claim 1, wherein said mixer comprises a plurality of immovable lamellae, disposed obliquely with respect to a flue gas flow.

10. The cleaning device according to claim 1 in combination with an air preheater connected downstream of said catalytic converter and heated by the flue gas, wherein said mixer is arranged upstream of the preheater in the given flow direction.

11. The cleaning device according to claim 1, wherein said catalytic converter is composed of a plurality of catalytic-converter layers, said mixer is a first mixer including respective mixers assigned to said catalytic converter and respectively disposed downstream of each catalytic-converter layer, and a mixer disposed downstream of said catalytic converter having wider lamellae than said mixers assigned to said catalytic converter.

12. The cleaning device according to claim 11, which comprises a second mixer disposed between said injection apparatus and said catalytic converter and having wider lamellae than said mixers assigned to said catalytic converter.

13. The cleaning device according to claim 1 connected to and configured to clean flue gas from a fossil-fuel-fired steam generator in a power plant.